the study of the labyrinth and in the pathology and surgery of the intracranial complications of Otic diseases. Dr. Gleason is to be congratulated on the possession of the happy faculty of presenting facts in a literary style that is at once entertaining, lucid and rememberable. G. W. C.

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**Nervous and Mental Diseases.** By Joseph Darvin Nagel, M. D., Consulting Physician to the French Hospital of New York, Member New York Academy of Medicine, Honorary Member Societe Royal de Belique, etc., Physician to St. Chrysostom's Dispensary. New (2nd) edition, revised and enlarged, 12mo, 293 pages, with 50 engravings and a colored plate. Cloth, $1.00 net. (The Medical Epitome Series.) Lea & Febiger, Publishers, Philadelphia and New York, 1914.

This book of 282 pages is divided into five parts: Part I, Diseases of the Peripheral Nervous System; Part II, Diseases of the Spinal Cord; Part III, Diseases of the Medulla Oblongata; Part IV, Diseases of the Cerebrum and Cerebral Membranes; Part V, Diseases of the Mind.

It is stated in the preface that one of the chief aims of this small volume is to enable the student to make a quick review of the principal nervous and mental affections. At the end of each chapter follows a selected list of State examination questions. The discussion of each disease is necessarily brief and the book is not intended to supplant the larger and more complete text books on the subject. W. F. S.

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## DEPARTMENT OF PHARMACY AND CHEMISTRY.

Edited By FRED I. LACKENBACH.

### NOVOCAINE (N. N. R.)

Novocaine is a synthetic chemical—the hydrochlorid of p. aminobenzolyldiethylaminoethanol. It crystallizes from alcohol in colorless needles possessing a melting point of 156° C. It can be heated without decomposition to 120° C. It dissolves in equal parts of cold water, the solution possessing a neutral reaction. In alcohol it dissolves in the proportion of 1:30. Caustic alkalies and their carbonates precipitate the free base from the aqueous solution in the form of a colorless oil which soon solidifies to a crystalline mass, but solution of sodium bicarbonate is miscible with solutions of novocaine without producing either precipitation or turbidity. The aqueous solution of the salt may be heated to boiling without decomposition and remains perfectly clear when kept for days in loosely-stoppered vials. It gives precipitates even in very dilute solutions with the usual alkaloidal reagents—such as potassium mercuric-iodide, picric acid, potassium iodide, etc. It is incompatible with alkalies and their carbonates and the alkaloidal reagents.

Novocaine is a local anesthetic similar in action to cocaine but much less toxic than cocaine, and said to be less toxic than other cocaine substitutes. When injected subcutaneously it is said to exert a prompt and powerful anesthetic action, but the effect is not sustained. This may be remedied by the simultaneous injection of the suprarenal alkaloid. Novocaine is apparently devoid of irritant properties. It is said to be useful in all cases in which cocaine is indicated. Novocaine does not come within the scope of the recently-enacted Harrison Act.

Novocaine appears on the market in the forms of base, the hydrochlorid, and the nitrate. Also in compressed tablets for the convenient preparation of solutions of various strengths, and in combination with epinephrine.

Novocaine base occurs in powder form and is soluble in oils. It is used in the preparation of oily solutions for nose and throat application—generally in a ten per cent. solution.

Novocaine nitrate is preferred where employed in combination with silver salts—with which it forms no precipitate—as in urethral irrigations, etc. The three per cent. solution is most commonly employed.

Novocaine hydrochlorid is used for the preparation of aqueous solutions which may be sterilized by boiling without decomposition or loss of activity. When epinephrine is added solutions should not be exposed to continued boiling since the active principle of the adrenals loses in activity by continued boiling.

For infiltration anesthesia: solutions of one-fourth to one-half of one per cent. are employed—prepared by dissolving 0.250 to 0.500 gm. novocaine in 100 cc. physiologic salt solution. To this may be added five to ten drops epinephrine solution (1:1000). The one-fourth of one per cent. solution, it is said, suffices to completely anesthetize the thick nerve trunks—as the sciatic nerve, in about ten minutes.

Solutions varying from one-half of one per cent. to two and a half per cent. are employed for local anesthesia—by injecting around the field of operation and by interrupting the conductivity of the nerve trunks which innervate the field of operation.

For lumbar anesthesia: from 2 to 3 cc. of a five per cent. (or from 1.25 to 1.8 cc. of a ten per cent.) solution may be employed—with the addition of five drops epinephrine (1:1000) solution to 3 cc. of the 5%, or 2 cc. of the 10% solution.

For instillations and injection solutions: one-half of one per cent. to two per cent. solutions may be employed—with or without epinephrine. Quantities up to 100 cc. of the weaker solution, it is said, may be safely employed.

In ophthalmology: one to five to ten per cent. solutions are employed—no dilation of the pupil resulting. The novocaine is dissolved in physiological salt solution to which may be added 6 to 8 drops epinephrine solution (1:1000) to each 10 cc.

In Rhino-Laryngology. for anesthetizing mucous membranes five to ten per cent.; and for the larynx and pharynx, ten to twenty per cent, solutions are recommended.

For internal use: novocaine, owing to its feeble toxicity, may be given in doses up to 0.5 gm. (7½ grains) to adults.

#### Bibliography on Novocain.

G. W. Crile: Anoci-Association. Keen's Surgery, Vol. VI, p. 158, 1913.
C. M. Mayo: Goitre. Ill. Med. Jour., Feb., 1913, p. 125.
Arthur D. Bevan: Surgery of the Gall Bladder and Bile Ducts. Jour. Mich. State Soc., Mar., 1913, p. 186.
T. Turner Thomas: Local Anesthesia in Trigeminal Operations. Keen's Surgery, Vol. VI. p. 416, 1913.
W. J. Mayo: Short Visit to Hospitals in Germany, etc. Journal-Lancet, August 15, 1912, p. 423.
Joseph C. Bloodgood: Treatment of Shock. Progressive Medicine, December, 1912, p. 207.
Neil & Crooks: Supraclavicular Anesthetization of the Brachial Plexus. N. Y. Med. Jour., Mar. 15, 1913, p. 570. (Abstract.)
K. L. Stoll: Local Anesthesia in Some Branches of Major Surgery. Lancet-Clinic, Dec. 14, 1912, p. 640.
W. A. Bryan: Laewen's Method of Anesthesia. Jour. Tenn. State Med. Assoc., Oct., 1912, p. 240.
Southgate Leigh: Safeguarding and Lessening the Disagreeable Features of Surgical Operations. Charlotte Med. Jour., Dec., 1912, p. 377.
Finsterer: Technic of Paravertebral Nerve Anesthesia. Amer. Jour. Med. Sci., Aug., 1912, p. 294. (Abstract.)
John Allan: Anesthesia in Submucous Resection of Septum Nasi. Med. Rec., July 13, 1912, p. 54.
L. Eloesser: Recent Advances in Regional Anesthesia. Calif. State Jour. Med., Mar., 1912, p. 90.
Carroll Smith: Intravenous Local Anesthesia. Jour. A. M. A., Mar. 23, 1912, p. 855.
W. Freudenthal: Local Anesthetics in Upper Respira-